



# Scientific Data Purchase Project

## JACIE High Spatial Resolution Imagery Workshop

**Fritz Policelli**

**Earth Science Applications Directorate  
NASA Stennis Space Center**

**March 19 - 21, 2001**

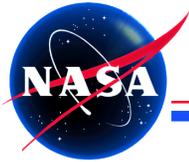
**phone: (228) 688-7709**

**email: [fritz.policelli@ssc.nasa.gov](mailto:fritz.policelli@ssc.nasa.gov)**



# **Special Thanks to the NASA SDP Team**

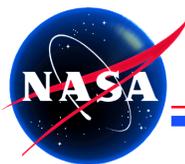
**(Whose outstanding work I get to present)**



# SDP Background

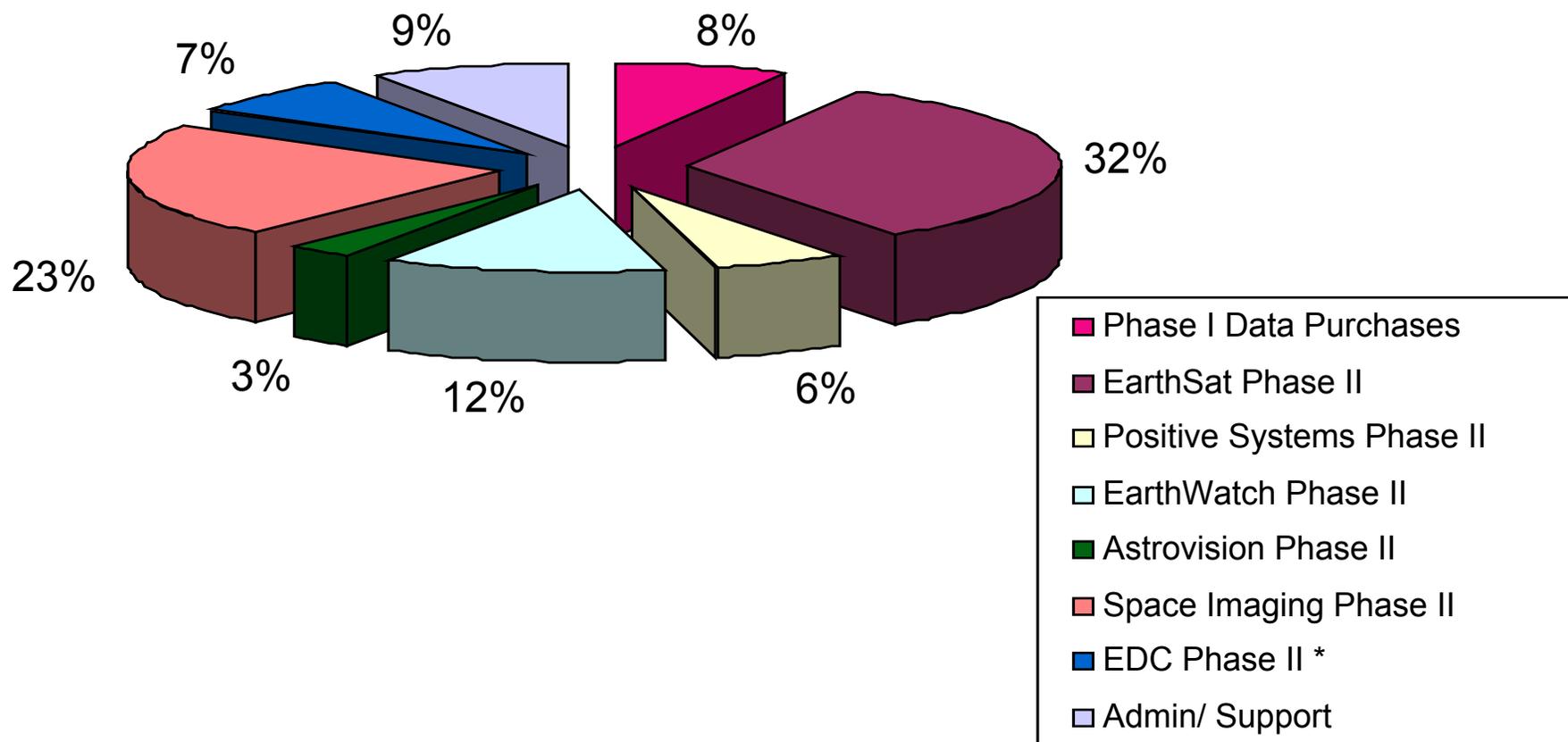
Stennis Space Center

- **\$50 Million Appropriation**
  - Acquire Science Data from Commercial Sources
- **Demonstration Project**
  - Test new way of doing business
  - Tap new sources of data
  - Support Earth Science Research
  - Support Commercial Remote Sensing Industry
- **Phase I** - Review simulated/prototypical data sets (10 companies)
- **Phase II** - 3 year purchase/distribution of select data (5 companies)



# NASA \$50M Scientific Data Purchase Obligations

Stennis Space Center



**\*Raw Data for EarthSat Project**



# SDP - Earth Satellite Corporation

Stennis Space Center

6011 Executive Blvd, Rockville, MD 20852

## Data Description

- MSS Scenes ~ 1970 (UTM,  $\pm 100\text{m}$ )
- TM Scenes ~ 1990 (UTM,  $\pm 50\text{m}$ )
- TM Mosaics - bands 7,4,2 ( $5^\circ \times 6^\circ$ )

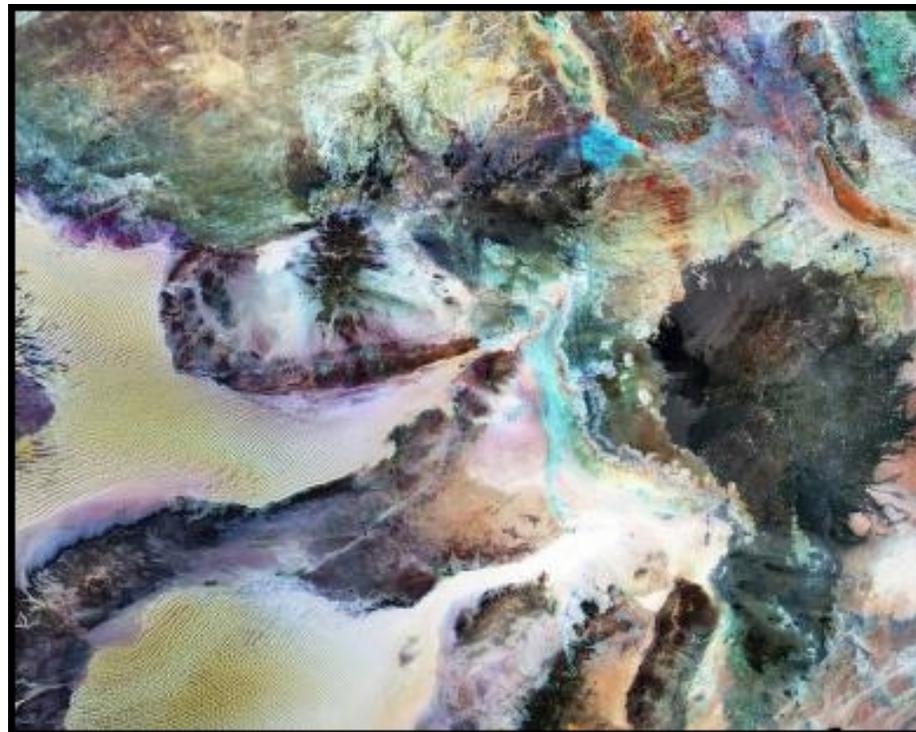
Coverage: Global Land Areas

Data Rights: Unrestricted



**US Regional Mosaic**

## ***GeoCover™* Products** **Orthorectified Landsat Imagery**



**North Africa Mosaic**



# SDP EarthSat Status

Stennis Space Center

- **Global Orthorectified Landsat MSS, TM, and TM Mosaics**
  - **TM Ortho Data Delivered:**
    - North America/ Central America/ Carribean
    - Middle East
    - Africa
    - N.E Asia
    - Australia
    - Southern S. America
  - **TM Mosaics Delivered:**
    - North America/ Central America/ Carribean North America
    - Africa/ Australia
  - **S. Eastern Asia in Work**
  - **Europe on hold - ESA Re-processing**
  
- **EDC to Distribute Data**
  - **EarthSat working final metadata format**
  - **EDC to begin distributing Spring 2001**
  - **SSC to ship aprox. 150 scenes/wk to EDC and NIMA**



# SDP - EarthWatch, Inc.

Stennis Space Center

1900 Pike Road, Longmont, CO 80501-6700

Intermap Technologies Inc. Global Terrain  
STAR-3i Airborne Interferometric SAR System

## Data Description

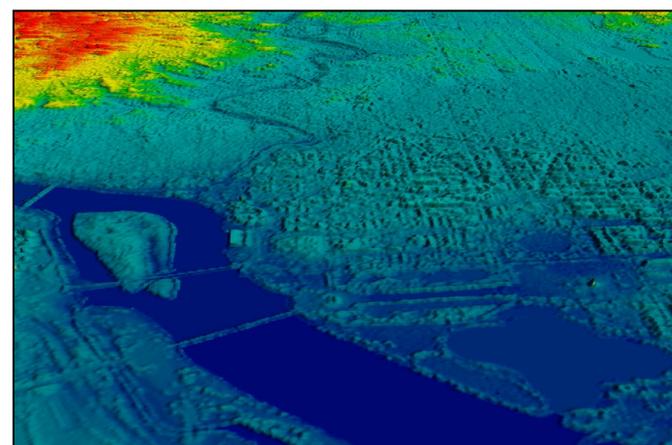
**ORI - Orthorectified Radar Mosaics (7.5' Quad, 8-bit)**  
(2.5m resolution, UTM  $\pm$  2.5m)

**DEM - Digital Elevation Models (7.5' Quad, 32-bit)**

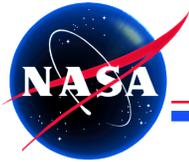
- GT 3 (10m posting, UTM  $\pm$  2.5m, Vertical  $\pm$  3m)
- GT 2 (10m posting, UTM  $\pm$  2.5m, Vertical  $\pm$  2m)
- GT 1 (5m posting, UTM  $\pm$  2.5m, Vertical  $\pm$  1m)

Data Rights: Distribution limited to NASA ESE  
community for NASA related work

Coverage: As Tasked



3-D Oblique Views of Star-3i Data  
Products Over Washington, D.C.



# SDP EarthWatch / Intermap Status

Stennis Space Center

- **2.5 m X-band SAR/ 3 m accuracy DEM's aircraft data**
- **\$6.2M delivery order fully tasked**
- **13 proposals approved (plus set asides)/ 19 proposals disapproved**
- **All acquisitions completed/ all data delivered**
- **EarthWatch/ Intermap conducted workshop at SSC in February 2000**
- **Contract has IDIQ provisions**
  - Red River Flood Plain Mapping - FEMA
  - North Carolina - State of North Carolina
  - Alaska 2000 Initiative



# SDP - Positive Systems Inc.

Stennis Space Center

250 Second Street East Whitefish, MT 59937  
**ADAR System 5500 Digital Aerial Photography**

- 1-Meter Spatial Resolution
- 8-bit Radiometric Resolution
- Multispectral Imagery (blue, green, red, NIR)

## Data Description

### **IM-R1i-55 Product, Single-Frame Images**

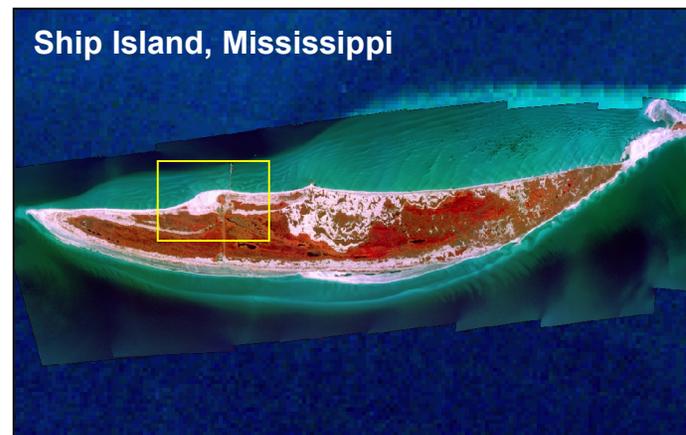
(Center Coordinate known to  $\pm 100\text{m}$ )

### **MOS-G1 Product, Mosaics**

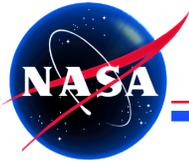
- Benign Terrain (UTM  $\pm 12.2\text{m}$ )
- Rugged Terrain (UTM  $\pm 33\text{m}$ )
- Extreme Terrain (UTM  $\pm 50\text{m}$ )
- Severe Terrain (no guarantee)

Data Rights: Distribution limited to NASA ESE community for NASA related work

Coverage: As Tasked



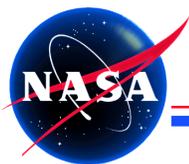
1997 Positive Systems Mosaic



# SDP Positive Systems Status

Stennis Space Center

- **1m 4-band Multispectral aircraft data**
- **Total Delivery Order Value \$2.9M**
- **\$10K Available for Tasking**
- **41 Tasking Requests Approved/ 33 Disapproved**
- **\$2.4M Costed**
- **Contract has IDIQ provisions**



# SDP - Astrovision, Inc.

Stennis Space Center

PMB 1010, 267 Kentlands Blvd, Gaithersburg, MD 20878

## AVStar-1 Geostationary Satellite Imagery

- RGB Color
- Max frame rate at 15 frames per minute

### Data Description

#### Wide-Field Camera

- 7 Kilometer Spatial Resolution

#### Narrow-Field Camera

- 600 Meter Spatial Resolution
- Pointable Camera
- Interactive event tracking

### Coverage:

- Hemispherical disc centered on Central U.S.
- 40 point and dwell opportunities
- 5 months of data  
(tornado season in Midwest/South U.S.)

### Data Rights:

- Distribution limited to NASA ESE community

*Data Not Available*  
*Launch Scheduled for Q4 2002*



AVStar-1 Satellite Imagery of Hurricane Luis (simulated using GOES-9 data)



# SDP - Space Imaging, LLC

Stennis Space Center

9351 Grant Street, Suite 500 Thornton, CO 80229

## IKONOS-2 Satellite Imagery (11 Bit)

- 1 meter panchromatic (Pan)
- 4 meter multispectral (MSI)

### Data Description

#### Original Product - Georectified Pan/MSI

- Standard (UTM,  $\pm 250\text{m}$ )
- Precision (UTM,  $\pm 3\text{m Pan}$ ,  $\pm 5\text{m MSI}$ )

#### Master Product - Orthorectified Pan/MSI

- Standard (UTM,  $\pm 12.2\text{m}$ )
- Precision (UTM,  $\pm 2\text{m Pan}$ ,  $\pm 5\text{m MSI}$ )

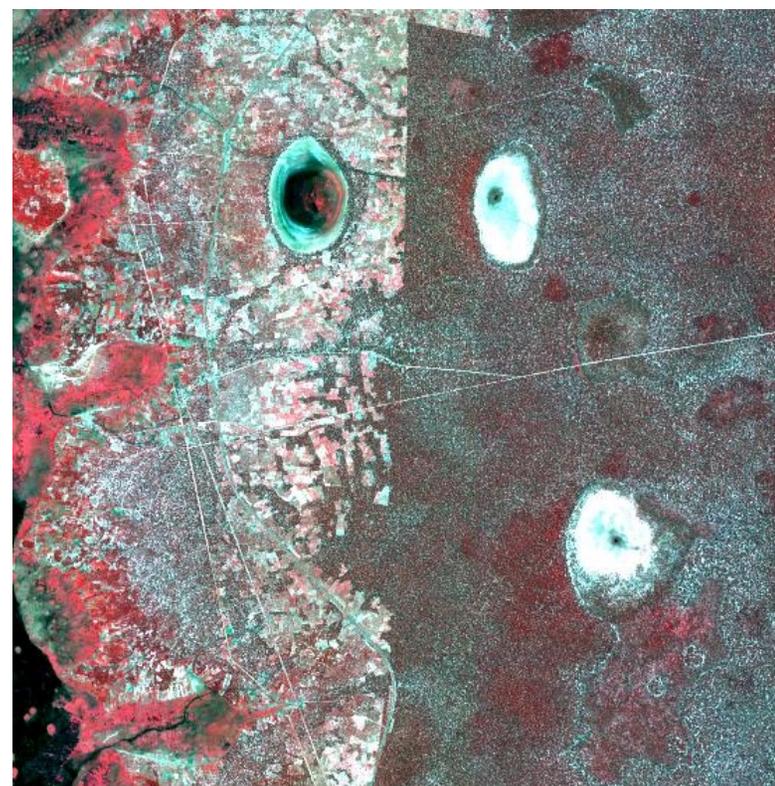
#### Model Product

- Digital Elevation Models  
(UTM,  $\pm 25.4\text{m}$ , 15m posting,  $\pm 7\text{m Vertical}$ )
- Pan/MSI Stereo Pairs  
(UTM,  $\pm 25.4\text{m}$ ,  $\pm 7\text{m Vertical}$ )

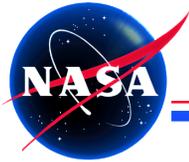
### Data Rights:

- Distribution limited to NASA ESE
- Derived products may be distributed within NASA science/ research community

### Coverage: As Tasked



Site in SW Zambia



# Scientific Data Purchase Project Space Imaging - Status

Stennis Space Center

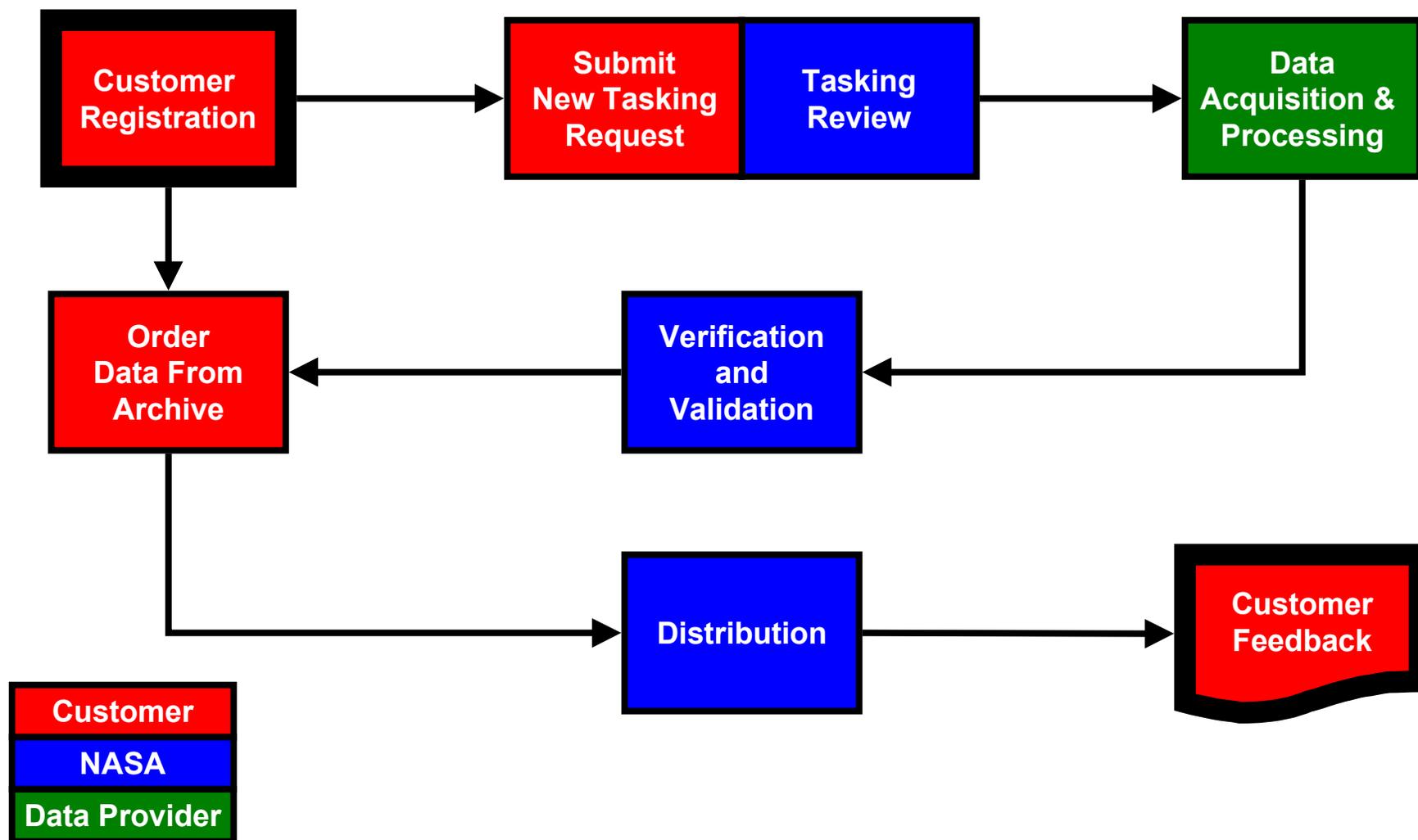
- **Total Delivery Order Value \$11.3M**
- **291 Tasks Approved, Valued at \$5.6M**
- **48 Tasking Requests Disapproved**
- **\$5.3M Set Aside**
  - \$1.8M MODLAND Science Team
  - \$1M Alaska Project
  - \$1M Landsat 7 Science Team
  - \$0.8M USGS EDC
  - \$0.4M SSC Validation
  - \$0.3M Ag 20/20
- **\$2.4M Available for new tasking requests**
- **Approx. \$2.3M costed**
- **SDP Data Validation in Work**
  - SSC partnering with USGS and NIMA
  - Workshop March 19-21 DC Area
- **Contract has IDIQ Provisions**



# SDP General Process

Stennis Space Center

*SDP is ISO 9001 Certified*





# SDP Registration

Stennis Space Center

<http://www.crsp.ssc.nasa.gov/databuy>



## REGISTRATION

Project Name

Funding Source (NASA, Gov., Other)

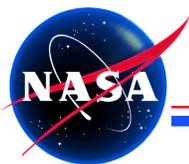
Type (MOU, Grant, Contract, Employee)

Agreement Number, Expiration Date, Value

Government Contact Person

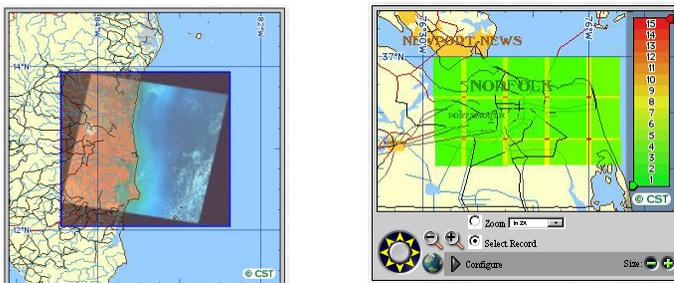
Synopsis of Research





# SDP Archive - Terrasoar <sup>TM</sup>

Stennis Space Center



Log In Prefs **Map** Databases Refine Results Cart ?

**Did You Know...**

Use the "Zoom" menu and select a point on the map to magnify and/or center a specific feature or landmark. The two icons to the left of this menu point. The Earth icon below this sets the view to its minimum magnification, usually the whole world. The ring of arrow icons on the left shift right make the map image larger or smaller, or the "Configure" twiddle can be opened for numeric size control and to select different map layers.

Depending on your preference settings, either the boundaries of the current view will define the search area, or an "Input" menu may be present to begin a search of the specified area.

Location:  Map  Coordinates  Gazetteer

Zoom: 1:24 Area - First Point

Configure Size: [ - ] [ + ]

c148a\_03\_227r.lm.tar.jpg

Search: [ magnifying glass ]  
 [ - ] [ + ] [ Earth ] [ Configure ]

```

numeric key : 164
filename : c148a_03_227z.Lan.
filepath : ./buffalo
archive filename : buffalo.3.tar
archive filepath : /h/databuy2/.aschl
original filename : 6955198
  
```

c148a\_04\_228r.lm.tar.jpg

Search: [ magnifying glass ]  
 [ - ] [ + ] [ Earth ] [ Configure ]

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numeric key : 165
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archive filepath : /h/databuy2/.aschl
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c148a\_04\_229r.lm.tar.jpg

Search: [ magnifying glass ]  
 [ - ] [ + ] [ Earth ] [ Configure ]

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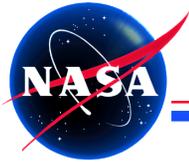
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```



# SDP Tasking

Stennis Space Center

## Customer Input: (mini proposal)

- **Application/Science Topic/ Research Objective/ Use of Data**
- **Products/ Coordinates/ Acquisition Window**
- **Special Requirements**
- **Citizenship/ Agree to Data Rights**

## Tasking and Measurements Committee:

- **NASA ESE Program Managers**
- **Quarterly Review Cycle**
- **“Early Birds” reviewed as-feasible**

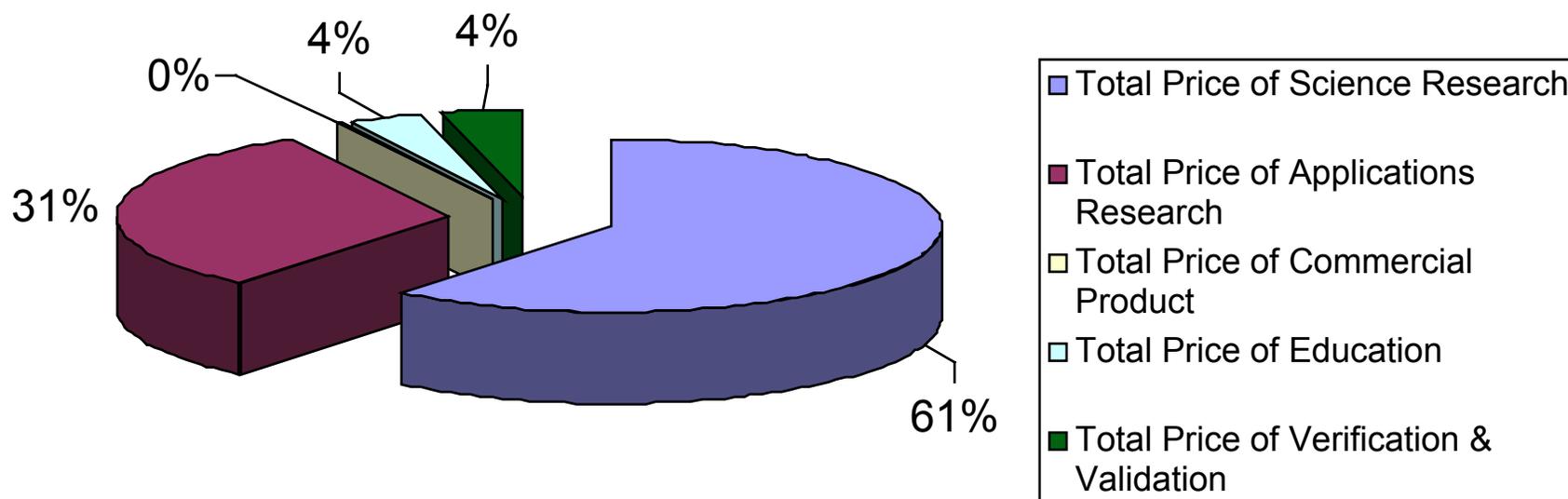
## Score Based on:

- **Value and applicability to ESE PROGRAM research**
- **Supports government agencies, industry, & multiple projects**



# Total Price of Tasked Orders Subdivided by Response Category

Stennis Space Center

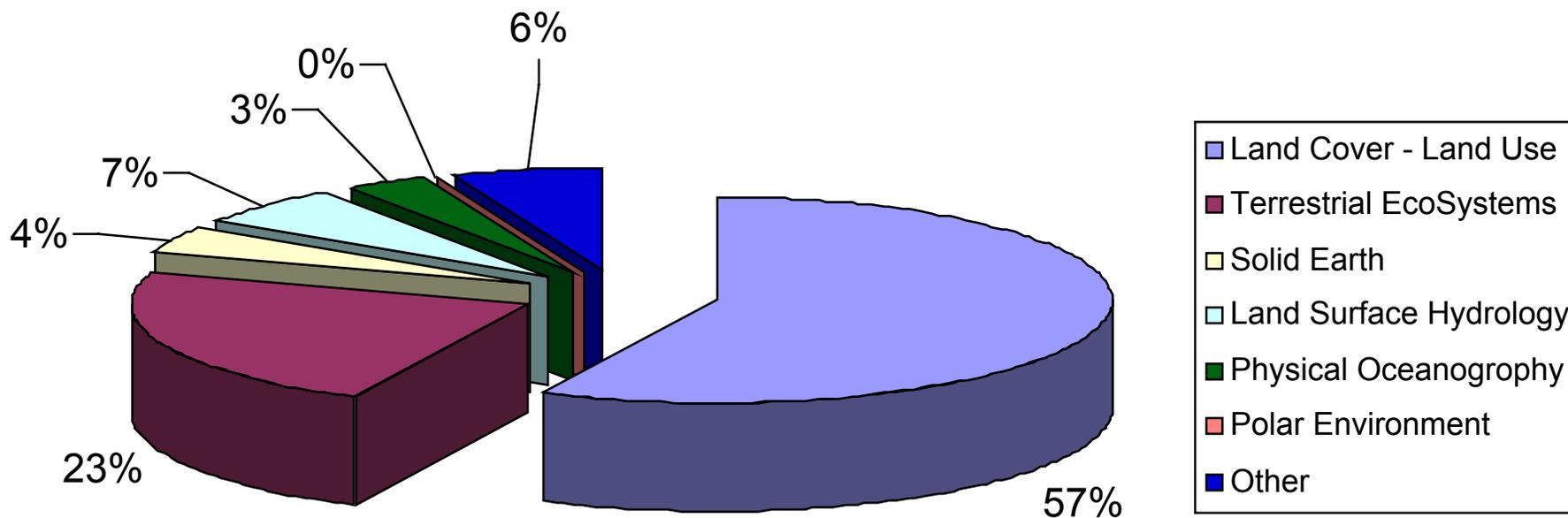


This Survey is Based On \$4,603,049.23 Representing 80.8% Of All Tasked Orders Delivered As Of November 9, 2000



# Total Price of Tasked Orders Subdivided by Science Research Category

Stennis Space Center

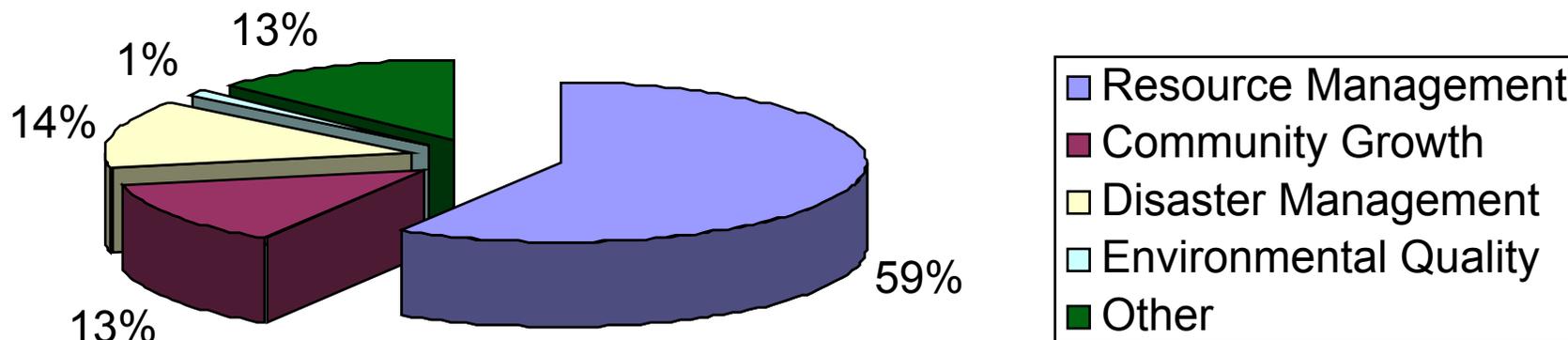


This Survey is Based On \$4,603,049.23 Representing 80.8% Of All Tasked Orders Delivered As Of November 9, 2000



# Total Price of Tasked Orders Subdivided by Applications Research Category

Stennis Space Center



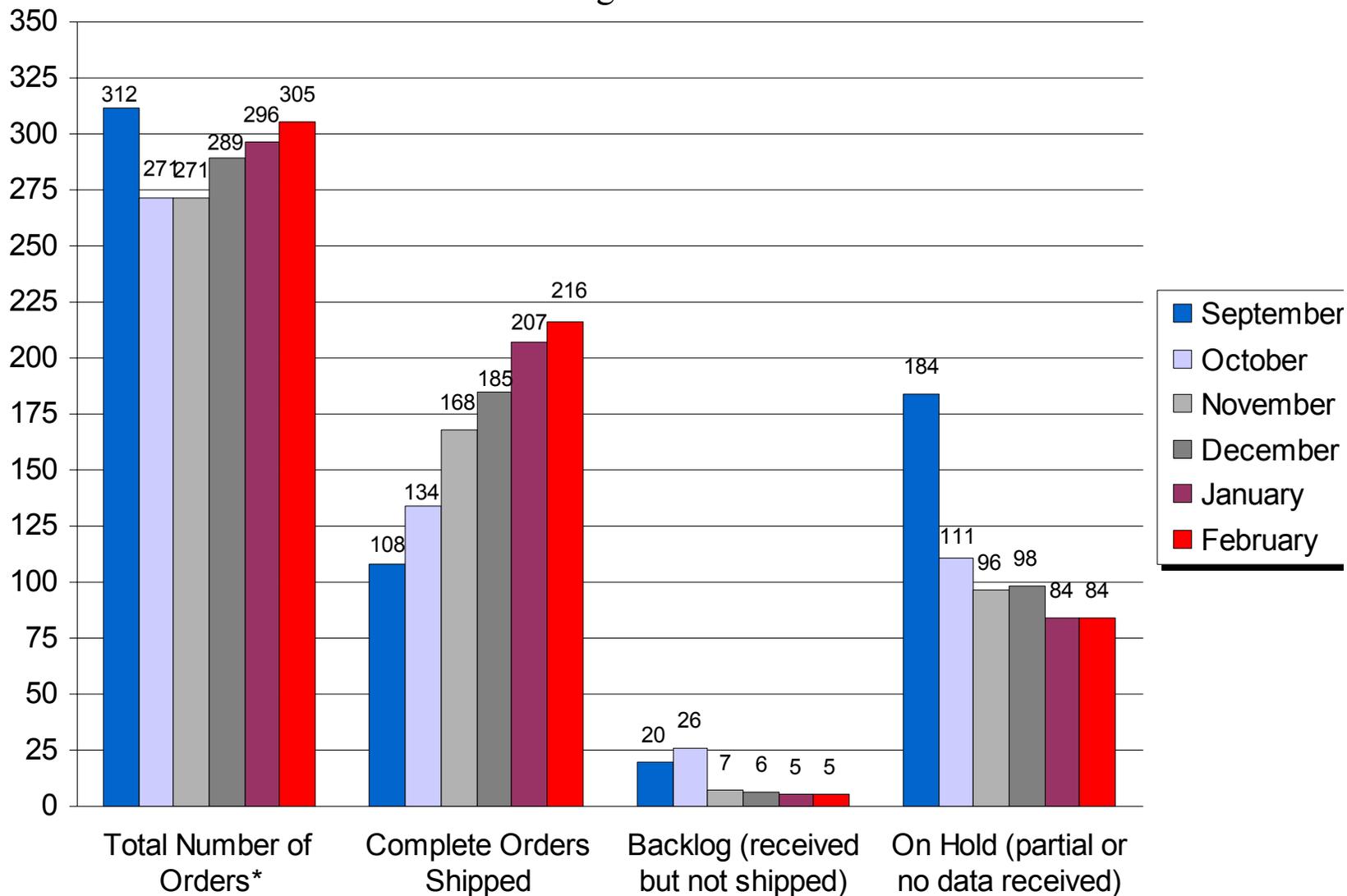
This Survey is Based On \$4,603,049.23 Representing 80.8% Of All Tasked Orders Delivered As Of November 9, 2000



# SDP Tasking Orders

Stennis Space Center

## SDP Tasking Orders to Date

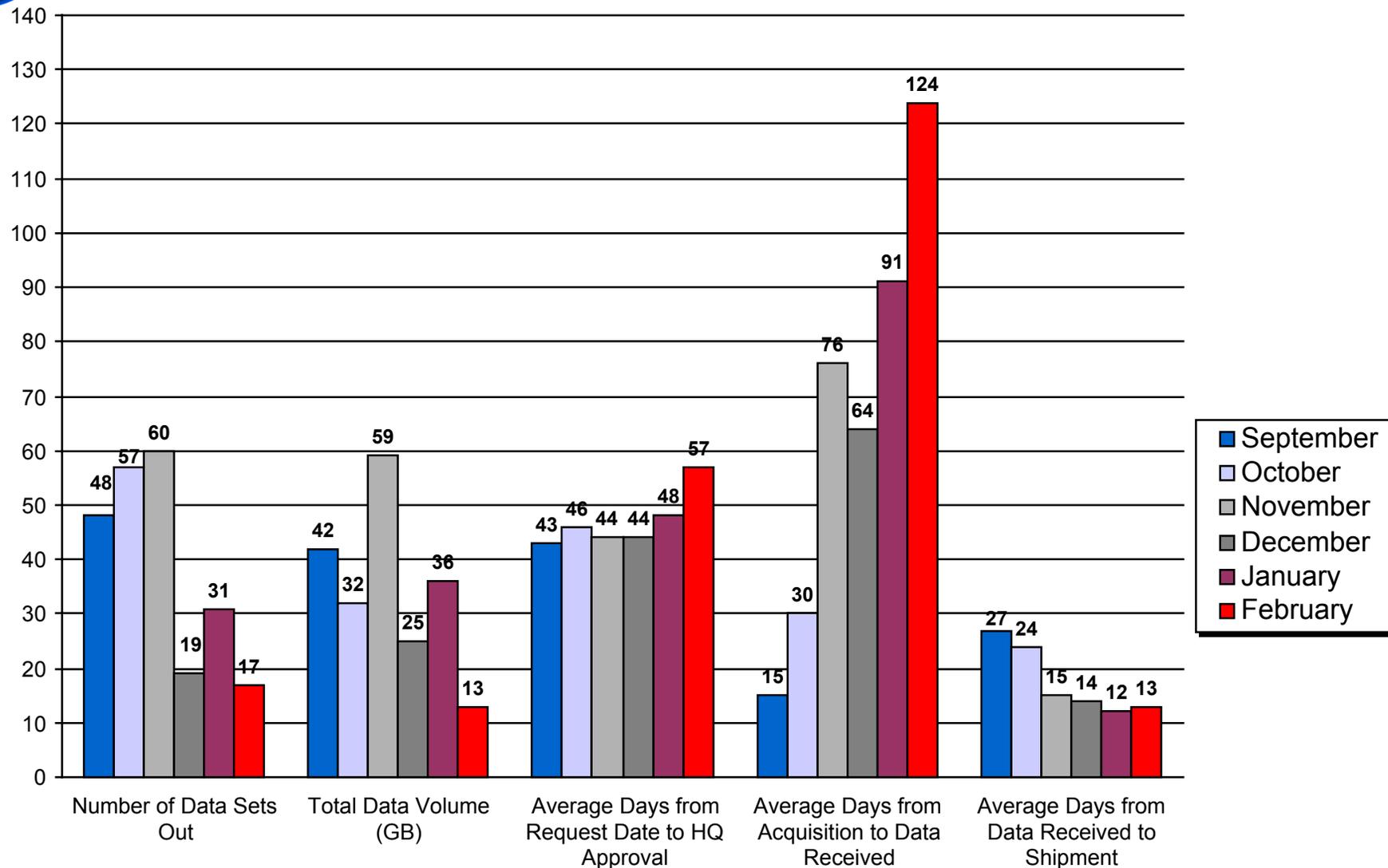


\*Variation in Total # of Orders due to Cancelled Tasks



# SDP Distribution from Tasking per Month

Stennis Space Center



**Grand Totals:**

**404 Data Sets**

**742GB**



# SDP Project Status

Stennis Space Center

**Registered Users** 476

**Tasking Requests Approved** 339

**Tasks Completed** 216

**Number of Archive Orders** 238

**Archive Orders Completed** 206

**Data Volume Received** 5.4 TB

**Data Volume Expected** 8+ TB

**Data Volume Distributed** 4.7 TB

**Data Sets Distributed:** 686



# SDP - Geographic Coverage Available to Date

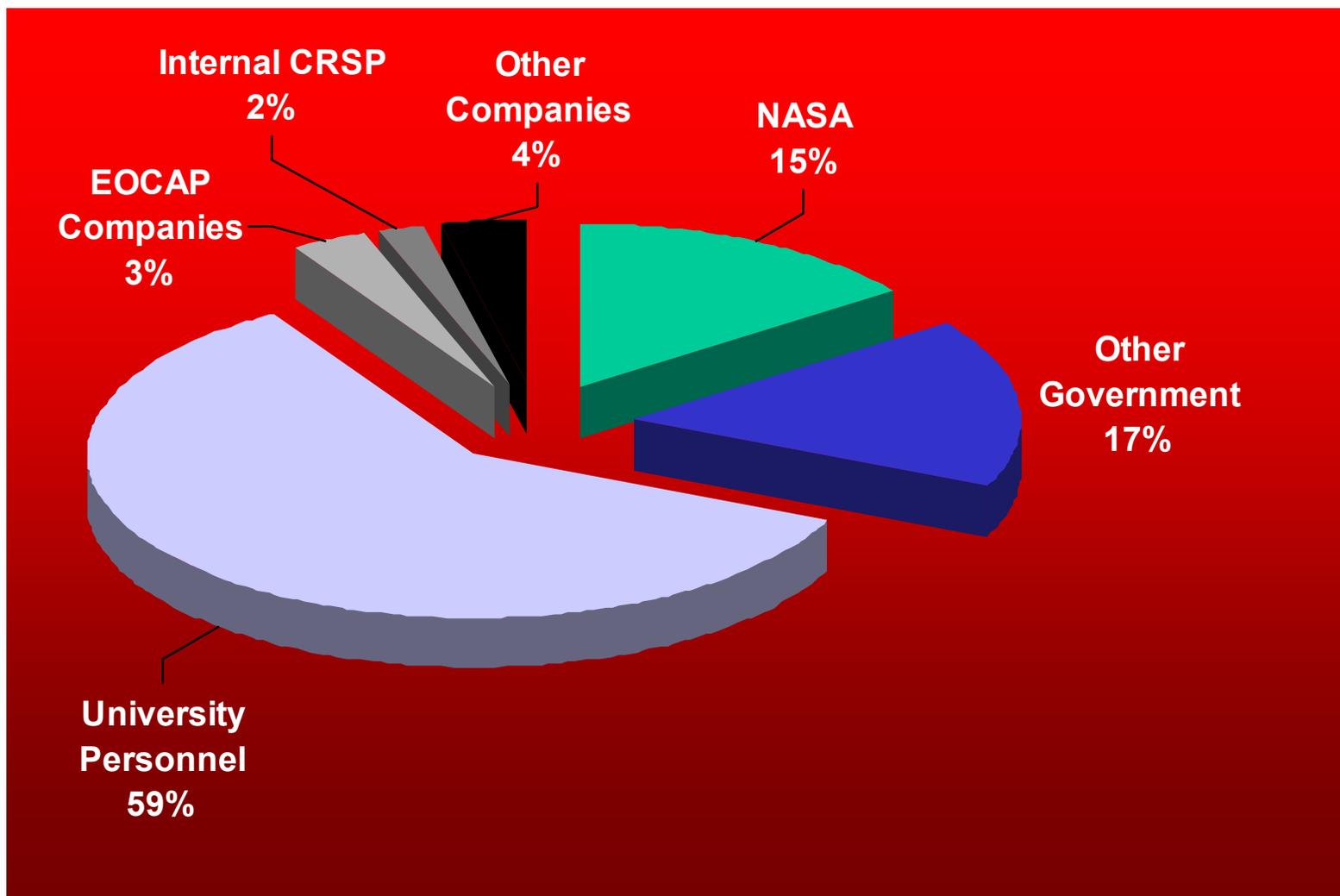
Stennis Space Center

Company	Product	Through September	October	November	December	January	February
EarthSat (scenes)	TM	3515	4115	4115	4115	4538	4538
	MSS	0	0	233	233	233	233
	Mosaic	177	177	187	220	220	220
EarthWatch (km <sup>2</sup> )	All	99635	107660	111500	113100	116054	116054
Positive Systems (km <sup>2</sup> )	Imagery	8045	8045	8307	8626	8626	8626
	Mosaic	1081	1081	1081	1081	1148	1148
Space Imaging (km <sup>2</sup> )	Imagery	26753.3	32683.3	41384.8	45509.8	48986	50898

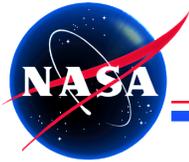


# Who's using the SDP?\*

Stennis Space Center



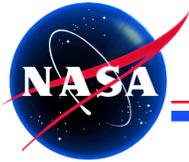
\*Percentages Based on the Total Number of Data Recipients



# SDP User Feedback

Stennis Space Center

- **Customer Satisfaction Index = 8.32**
- **Sample Size = 101**
- **No. of Data Sets Shipped = 422**
- **Percent response = 23.9**
  
- **Data Quality CSI = 8.29**
- **Data Utility CSI = 8.34**
- **SDP Service CSI = 8.33**
  
- **Based on average response of customers to questions on data quality/ usefulness of data/ SSC service. 10 is a perfect score**



# Other Data Buy Activity

Stennis Space Center

- **\$ 20M Congressional Plus Up to NASA for New Data Purchases**
- **Evaluating Proposal for Hyperspectral Data**
  - Orbimage OV-4 (8m Hyperspectral)
- **2 Post-2002 Missions in Evaluation as Data Buys**
  - Landsat Data Continuity Mission
  - Global Tropospheric Winds Sounder Mission



# The End